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Subject: STICS: Clearance Initiation: #ORD-049840: Systematic Evidence of Noncancer Health Effects of PCB Mixtures

This e-mail is to inform you that you have been copied on the following clearance submission in STICS:

- **Product type, subtype:** Reports and Guidance, Report
- **Product title:** Systematic Evidence of Noncancer Health Effects of PCB Mixtures
- **Author(s):** Carlson, L,G. Lehmann,E. Yost,B. Ingle,E. Coffman,K. Christensen,R. Shaffer,J. Trgovcich,S. Sagiv,P. Rajan,C. Klocke,P. Lein,A. Sergeev,M. Bloom,M. Toborek,L. Robertson,T. Jusko,J. Meeker,A. Keating,C. Lin,K. Shipkowski and R. Silva
- **Initiator:** Krista Christensen,ord/cphea/cpad/samb
- **ORD Tracking Number:** Tracking # ORD-049840
- **Impact / Purpose Statement:** This review compiles and organizes evidence for noncancer health effects associated with exposure to PCB mixtures in humans and other mammals to identify areas of robust research as well as uncertainty, data gaps, and research needs.
- **Product Description / Abstract:** Assessing health outcomes associated with exposure to polychlorinated biphenyls (PCBs) is important given their persistent and ubiquitous nature. PCBs are classified as a Group 1 carcinogen, but the full range of noncancer health effects that could result from exposure to PCBs has not been systematically summarized and evaluated. This review compiles and organizes human and other mammalian evidence for noncancer health effects associated with exposure to PCB mixtures to identify areas of robust evidence, as well as uncertainty, data gaps, and research needs. A protocol was developed that describes the literature search strategy and Populations, Exposures, Comparators, and Outcomes (PECO) criteria used to facilitate subsequent screening and categorization of literature into a systematic evidence map of PCB noncancer health effects across 15 health systems. A comprehensive literature search yielded 62,599 records. After a prioritization step that included machine learning and natural language processing, 17,037 studies were manually screened at the title and abstract level. An additional 900 studies identified by experts or supplemental searches were also included, for a total of 17,937 studies reviewed. After full-text screening of 3,888 references, 1,611 studies met the PECO criteria. Relevant study details such as the PCB congeners measured or administered, health systems and endpoints assessed, exposure duration, and species were extracted into literature summary tables and used to identify database strengths and gaps that would benefit from further research. Sufficient evidence is available to support PCB assessments for most health systems, but the amount of data to inform associations with specific outcomes differs. Furthermore, despite many years of research, sparse data exist for inhalation and dermal exposures, which are highly relevant human exposure routes. This evidence map provides a foundation for future noncancer hazard assessments of PCB mixtures and for strategic planning of research to fill remaining data gaps.

- **Sub-Product ID and Title:** HERA.401.1.4.18: Government Report Systematic Evidence of Noncancer Health Effects of PCB Mixtures
  - For reference, you can also view the Sub-Product in RAPID.

- **Tracking and Planning 2019 Forward Field Set**
  - Research Area: HERA.401 Science Assessment Development
  - Product: Draft - PCBs IRIS Assessment
  - Product Description: The IRIS Assessment for Polychlorinated Biphenyls (PCBs - Noncancer) was requested by the Office of Land and Emergency Management (OLEM) to support statutory and regulatory actions under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The draft IRIS assessment includes a comprehensive analyses and characterization of the available information on the potential human health hazards posed by exposure to PCBs, as well as quantitative (dose-response) estimates of those hazards. The completed draft assessment and charge questions are released for public review and comment prior to external peer review.
  - Topic(s):
    - Science Assessments and Translation
  - Research Program Area: Health and Environmental Risk Assessment

- **Product Category:** Does not require Advance Notification
- **Is there an approved QAPP (or QAPPs) supporting this product?:** Yes
- **QAPP Reference:** L-CPAD-0030729-QP-1-5
- **Keywords:**
  - Polychlorinated Biphenyl
  - Hazard identification
  - Chemical mixtures
  - Systematic Evidence Map
  - systematic review

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